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News Letter

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WINTER FLYING

Your attention is invited to the different flying technique, changeable weather conditions, and related problems experienced in winter flying weather which may be expected during the next several months in Montana. Visibility will be limited and restricted due to snow and fog which can suddenly change favorable weather conditions to instrument flight. A coating of frost or ice on your wings can destroy the normal lift characteristics of your airplane. Be sure your wings are clean before attempting takeoff. Watch for ice blocking the landing gear retractable mechanism and be alert for ice or snow gathering within the wings or fuselage of your aircraft.

Check before takeoff on the field conditions and the weather at your destination. Crusted snow and deep snow can be costly on fields unsuitable for wheel landings.

Check your fuel lines for water and accumulation of ice. Be familiar with your engine operating characteristics, carburetor heat and operating oil temperature.

Many airplanes and a few pilots are lost each winter and spring due to changing flying conditions.

CAA REPORTS ON FLIGHTS OVER NORTH ATLANTIC

The Civil Aeronautics Administration calculates that 86 civil airplanes a day flew across the North Atlantic in July and August. This means that about once every 16 or 17 minutes a passenger plane, either scheduled or nonscheduled, was taking off for transatlantic flight.

Of the 5377 trips during those months, U. S. flag scheduled carriers flew 2373, nearly as many as the 2412 flown by all foreign carriers combined. The CAA's unofficial count did not include military flights, flights by planes operated by private persons or business firms, and included only a few all-freight trips listed by one irregular carrier.

The 1956 figures for U. S. launched carriers showed a slight increase in the number of flights over the 1955 record. Irregular carriers dropped from 372 trips in July 1955 to 223 in the same month this year. As was the case last year, Pan American led during the two months of 1956 with 1449 trips, TWA was second with 924, and the nearest foreign carriers was SAS with 378, BOAC with 324 and Air France with 305. —Am Avn Daily.

DC3—DC4?

Total flights by all passengers in two commercial transport models made by a single manufacturer in the past ten years would equal the great task of flying the entire population of the United States from New York to Chicago.

MONTANA AERONAUTICS CHART

The Montana aeronautics chart for 1957 will be available on Dec. 1st to flight operators throughout the state. As before the map may be purchased in wholesale lots from the commission in packages of 20 maps for $15.00. Single copies may be purchased from flight operators or the Sky Supply Store in Helena at one dollar per copy.

Revision of the map includes a new color scheme in green and yellow on the cover; a revised operational altitude chart; a revised airport directory; runway patterns on 20 airports in the state are shown in place of instrument letdown procedure, the radio facility chart has been revised showing new omni installations and other changes together with adiz zones and current aviation data.

Get your new aeronautics chart from your local flight operator and if he does not carry the chart ask him to order a quantity for distribution to pilots in your area.

MONTANA LOCAL SERVICE AIRLINE

The CAB has scheduled a hearing in Great Falls on February 11th at which time a Civil Aeronautics Board examiner will review evidence submitted by four airlines and many Montana communities for the purpose of determining which airline may service which Montana community and the justification for airline service to many Montana communities which do not at this time have airline service.

It is important that all Montana cities present material to the CAB at the scheduled hearing so that sufficient justification may be shown to obtain airline service to as many communities as possible with convenient schedules for travel by air between the cities of this state.

Each of the four airlines making application to service Montana cities are efficiently operated and well-equipped to give safe and satisfactory air transportation to the cities of Montana.

HANGAR TALK

A CAB report tells of a pilot whose certificate was suspended for 6 days because he "piloted in a careless and improper manner in that he removed his hands from the control wheel and forced his attentions upon his woman passenger notwithstanding the fact that the passenger objected to and resisted the respondent's advances." The report does not say whether this would have been considered careless and improper flying if the passenger had not objected.—Oregon Air News.

NATIONAL ASSOCIATION OF STATE AVIATION OFFICIALS

PURPOSE—"To foster aviation as an industry, as a mode of transportation for persons and property and as an arm of the national defense, to join with the Federal Government and other groups in research, development, and advancement of aviation; to develop uniform aviation laws and regulations, and to otherwise encourage co-operation and mutual aid among the several states."

CURTIS OX-5

A national pilot organization has been formed and is known as the OX-5 Club. Many pilots today are unfamiliar with the OX-5 engine and the trials and tribulations of pilots who accumulated valuable flying experience behind these motors.

The Curtis OX-5 engine was the fifth of a series of aircraft engines designed and built by Glen Curtis and the Curtis Airplane Company. This Curtis engine was produced from 1915 to 1918 and powered nearly all of the World War I airplanes used in this country. The OX-5 was an eight cylinder, water-cooled V-8 engine with individual cylinders and developed 90 hp. at 1450 rpm.

It was unusual to find an OX-5 engine which would turn at the rated rpm and pilots usually were satisfied with a motor which turned 1400. Some pilots used considerable subterfuge in coaxing the desired rpm out of the engine and cases were known in which the pilot sawed off the propellor tips to get the number of revolutions out of the engine that he hoped to become accustomed to having.

The OX-5 was a good engine for its day being critical on the function of the carburetor which often caused motor failure due to plugged jets and water in the gasoline.

There was considerable satisfaction flying an airplane equipped with an OX-5 engine as the pilot could watch the rocker arms on each individual cylinder as they jumped up and down. These same rocker arms were used by instructors as a guide in teaching the student the attitude of the airplane in relation to the horizon.

Standard spare parts included a hack saw and several length of one-fourth inch cold round which could be sawed up to replace missing rocker arm pins. A jet wrench was standard equipment and no pilot was considered properly equipped unless he had a jet wrench together with boots, britches, white parachute silk scarf, helmet and goggles. The white parachute silk scarf was considered good barter material with the natives but no pilot would think of parting with his helmet, goggles or jet wrench.

Those of you who obtained your forced landing experience from the malfunction of an OX-5 engine may join this group of old time pilots by submitting evidence that you flew behind an OX-5 engine and an application form for membership to A B McMullen, Secretary OX-5 Club, Suite 403, 1101 Vermont Avenue, N. W., Washington, D. C.

AVAILABLE AVIATION FILMS

The following listed films are available for showing to aviation groups, local service groups, church groups, business organizations and schools. These films may be obtained free of charge by writing to the Montana Aeronautics Commission. Try to give two alternate dates and submit your request at least thirty days before you would like to have the films for showing.

The title of the first film is "**MONTANA AND THE SKY,**" running time 18 minutes, 16mm, color and sound. This film was produced by the Montana Aeronautics Commission and shows the use of aircraft in Montana economy, recreational scenes, and pictures of many Montana pilots engaged in the flying business. The aim of the film was to interest people in visiting Montana and inform Montana people on the use of the airplane.

"**THE FLYING BUSINESSMAN,**" running time approximately 14 minutes, 16 mm, color and sound. This film is about the business use of the airplane and is a simple introduction to aviation. It shows the airplane and how it functions and it takes up the business of learning to fly.

"**AIRPORT AMERICA,**" running time approximately 14 minutes, 16 mm, color and sound. Depicts the value of an airport from the sod strip to the air terminal. It is the story of airplanes in action—an attention compelling review of smoke jumping, forest spraying, crop dusting and varied activities of flying businessmen. It is recommended for communities having or desiring a small field.

"**THE FLIGHT DECISION,**" running time approximately 14 minutes, 16mm, color and sound. A safety film applicable to general aviation and brings in clear analysis to the pilot the fact it isn't so much the elements or momentary circumstances that cause flying accidents as it is the pilot's decision to fly or continue into such elements or circumstances.

"**AGRICULTURAL AVIATION,**" running time 14 minutes, 16mm, color and sound. This film takes a comprehensive look at the application of insecticides, herbicides and fertilizers on America's most stable crops—showing insect control, defoliation of cotton, stop-drop applications to fruits, et cetra.

The films were produced as a project by the National Association of State Aviation Officials in the interest of civil aviation. Your Director headed the Film Committee.

AVIATION SAFETY CENTER CITES NEEDS OF PRIVATE FLYING

Four specific and critical areas of private flying safety are cited by the Cornell-Guggenheim Aviation Safety Center as needing greater attention. The Center's statement stemmed from the recent private flying safety conference it sponsored in Wichita. The Conference brought forth need for:

1. Improved flight instruction for private fliers. It was recommended that an increase in instructors' pay would attract better qualified men since the quality of fliers is almost solely dependent upon the quality of instructors. Further cited as necessities was adequate training in basic navigation and IFR instruments and the Conference found that many facilities available for instrument training through aircraft dealers and local flying groups "are not being fully used."

2. More adequate low-level weather reporting. The lack of such information was called "a continually hazardous condition to the private pilot." Cornell-Guggenheim, in cooperation with the NATIONAL ASSN. OF STATE AVIATION OFFICIALS, and the AIRCRAFT OWNERS AND PILOTS ASSOCIATION, is planning a campaign to implement a new in-flight reporting program that will require "a number" of new weather observation and reporting stations and a "major educational program" to impress on the private flier the necessity of frequently reporting weather and flying conditions encountered in flight.

3. More adequate accident reporting to obtain accurate accident analysis. Non-uniformity of current methods was scored by the Conference, which called for a review of reporting procedures for integration of analytical efforts. The Center, it was revealed, is currently studying the overall problem.

4. Making small aircraft safer. The Conference urged the more rapid development of low-cost stability devices. While noting that safety of aircraft is constantly being improved, the Conference found that "many small aircraft" need "greater inherent spiral stability and stall-resistant characteristics.

The Conference pointed out that pleasure fliers average nearly one fatal accident per million miles flown, contrasted with one fatal accident per 15 million miles flown by business aircraft, and one in every 200 million miles flown by airlines.—Am Avn Daily.

STATE COLLEGE FLYING CLUB

William Lance, Billings, was elected president of the Montana State College Flying Co-op at a meeting held Oct. 29. Other officers were: Richard Roehm, Bozeman, vice president, Hayes Bryan, Bozeman, treasurer; Allan Hodges, Troy, secretary, and Donald Tracy, Barber, director.

Forty-three active members are reported in the club this year. One of the three club planes is temporarily out of the flight line to have the wings metallized and a new engine installed.

The possibilities of holding a state meet for all flying clubs was discussed with Norman Henily. This meet would be held next spring if enough interest is shown. Any club interested is urged to write to Student Flying Co-op, Montana State College, Bozeman, Montana.

ACCIDENT COMMENTS

Any pilot can profit by these CAA "Aerial Applicators' Accident Comments."

"It's a different airplane—when she comes-in with a load.

"It's your neck—even if it isn't your airplane.

"Some people say—there's a calculated risk to this dustin' business.

"It was found that four plugs would not fire and that the others were badly fouled.

"Heavy application of dust and operation from dusty landing areas may have aggravated the condition.

"They just won't 'put-up-with' being 'wrapped around' during the heat of the day—the way they will forgive such poor pilot judgment earlier in the morning.

"If you're going to fly these smaller fields—it just makes senses to carefully plan—how you're going to do it—and to do it that way.

"It was hot—the soup's thin when the temperature is over 100 and your reactions are slower.

"It's tough—but you gotta stay awake.

"There is the remote possibility of carbon monoxide poisoning, but this should have showed up in the autopsy."

NIGHT OR TWILIGHT

If you want to land before dark, fly it safely by determining the sunset time at your destination and then plan your flight accordingly. Remember, when you're flying in the twilight at 6,000 feet, it is already dark on the ground, due to the earth's curvature.

LAUNCHING THE SATELLITE

The earth, by virtue of its rotation, imparts to the launching vehicle an initial velocity of approximately five per cent of the total orbital velocity. For the chosen launching site on the east coast of Florida (latitude 28 28'N) the earth's rotational velocity is 1340 feet per second. The full rotational velocity is gained if the vehicle is aimed due east, the gain is reduced if the vehicle is aimed north or south of east so as to produce an orbit of greater than 28 28' inclination to the equator.

The three-stage vehicle takes off vertically under first stage power. It ascends in a smooth curve tilting gradually from the vertical in the direction (to the east) of the intended orbit. At first stage burnout the vehicle is about 36 miles above the earth and is traveling at an angle of roughly 45 to the vertical. The first stage separates and falls into the ocean about 230 miles from the launching point.

The second stage ignites immediately upon separation and proceeds under power on a progressively more inclined trajectory to an altitude of about 140 miles. At burnout it has a vertical velocity sufficient to ascent to 300 miles altitude and a horizontal velocity that is about half the required orbital velocity. The nose cone will have been jettisoned early in second stage powered flight. No separation occurs at second stage burnout, the second-third-stage combination coasts forward a distance of about 700 miles in ascending to the 300 miles third stage project altitude.

During the coasting period several important functions are performed. The two-stage vehicle is brought to the correct orientation (roughly tangential to the earth's surface) for projection of the third stage. Then the third stage is imparted with the rotation necessary for stable flight. When second stage zenith is reached, the third stage is separated and fired. At this point the vehicle is, so to speak, fully committed. No further control can be exercised. Separation of the payload, if desired, will have been previously aimed and timed to occur after third stage burnout.

At burning's end the third stage will have a velocity vector of some direction and magnitude. Owing to the accumulation of errors in second stage orientation, in sensing second stage zenith, and in third stage stability during firing, the final velocity vector can hardly be expected to be truly tangential to a circle. Moreover, the vehicle is being designed to have a final velocity in excess of that required for a circular orbit. This excess represents an essential margin for error. If the resulting satellite orbit lies within a perigee of 200 miles and a apogee of 1500 miles, then the launching vehicle will have accomplished its mission.

SATELLITE—WORLD'S FASTEST MOVING OBJECT

Excluding experiments with objects of very small mass, the satellite, without a propelling or guidance system, will be the fastest flying object manufactured and set in motion by man. The three-stage Vanguard launching vehicle, at its third stage burnout, will be the fastest propelling vehicle the world has yet known. Compared to it, a rifle bullet is crawling at a snail's pace; and other rockets, fired along the earth's surface, are simply plowing sluggishly through the heavier atmosphere of lower altitudes.

The man-made satellite will be traveling around the earth much faster than our natural earth satellite, the moon. For the moon circles the earth only once during a period of 27 days; the man-made satellite will circle the earth every 90 minutes—sixteen times in a period of 24 hours. Thus the satellite travels about 430 times around the earth while the moon is making one trip.

It is significant at this point to remember the highest velocity and the altitude record for a large rocket was established in 1949 by the two-stage Bumper-Wac. The altitude was 250 miles and the maximum velocity, attained at the end of second stage burning, was only 9,000 feet per second. The Bumper-Wac's payload weight was very close to that contemplated for Vanguard. That we now attempt to raise the same payload to 300 miles, and in addition, impart to it the more than 26,000 feet (five miles) per second of velocity necessary to insure an orbit, is a tribute to American engineering progress in rocketry and its many allied fields.

SATELLITE PROBLEMS

The next round of problems created by an earth satellite it is placed in its orbit are those associated with proving the satellite is in fact orbiting, and the measurement of its orbit. The Minitrack system developed by the Naval Research Laboratory for acquisition and tracking of the satellite by radio employs a sub-miniature radio transmitter which will operate within the satellite for at least two weeks, sending information to designated ground tracking stations. These ground stations will measure the angular position of the satellite as it passes through the antenna beam, recording its "signature" automatically without the need of initial tracking information. These ground stations will measure the angular position of the satellite as it passes through the antenna beam, recording its "signature" automatically without the need of initial tracking information. These data will be transmitted immediately to the Vanguard Communications Center and then to the Vanguard Computing Facility for the computation and publication of reports which will be transmitted to each optical tracking station and others to provide acquisition data on the satellite's movements.

The initial launching information such as time of launch, direction of launch and first and second stage tracking data, would localize the time of arrival of such a sphere over any given ground location to within six minutes and its position to within several hundred miles, during the initial orbit. The problem is to locate the object under these conditions; and the tracking problem is to measure its angular position and angular rate with sufficient accuracy to alert other tracking stations as to time and position of expected passage of the object. The solution of these problems is met in the Minitrack System of radio angle tracking, which utilizes an oscillator of minimum size and weight within the satellite to illuminate pairs of antennas at a ground station which measures the angular positions of the satellite using phase-comparison techniques.

There are many ways in which one might observe an artificial satellite optically. Probably the most certain method would be to put a bright light sources in the satellite itself to make it shine as a self-luminous, fast-moving star. Then telescopes, binoculars, theodolites and cameras could be used to determine the satellite's position. This method would require, however, a source of energy within the satellite, and would take up some of the available payload weight. Since optical observation would be at the mercy of the weather, Vanguard will depend on radio tracking.

FORGOTTEN MAN

It has been reported that the Porsche Spyder 550 (the four cylinder West German job that won four of the first five places in the small sports-car competition at Mexico's 1908-mile classic in '54) is put together with loving care that is seldom equalled. The story goes that every Porsche engine is stamped with the mark of one of the plants twelve master mechanics, who then assumes permanent responsibility for its performance.

We always thrill to the brand of craftsmanship that turns out champions. We thrill, too, to the mechanic who signs his work as proudly and as confidently as a Great Master. And we have genuine admiration for advertising astute enough to credit the right people for a good product. But we can not buy the inference that fine craftsmanship and willing acceptance of responsibility are rare commodities.

This puts some extra demands upon the mechanic. He must compete against the whole field, instead of just a few. Sometimes he is forced to deal with the frustration of being taken for granted, of apparently not being appreciated. But he knows that health and sunshine and the privilege of living in the free world are often taken for granted and apparently not appreciated, so he wipes his hands and keeps on being his skilled and dependable self.—Flight Safety Foundation.

THE BIG FIVE
WHAT IS YOUR CITY'S ATTITUDE?

Does your community have an airport? If it does what is the attitude of the citizens and officials of your community toward aviation and airports with regard to the following:

1. Future planning to keep your city "on the map" in an age when lack of aviation facilities will isolate a town or city just as lack of a main highway relegated yesterday's backward towns to stagnation.
2. Aircraft required to fly at low altitudes over populated areas while approaching an airport for landing.
3. Encroachment of new housing on established airports, nullifying future airport expansion thereby creating community airport problems.
4. Zoning policies of your locality; do they favor orderly housing growth but still protect future airport development?
5. Jet noises, vibration from large multi-engine aircraft, "sonic booms" and other by-products of air traffic which may result in actual property damage under certain conditions.

Aircraft Sabotage bill has been revised to include private aircraft. The measure signed by the President on July 14 makes the wilful sabotage of airplanes and facilities serving them punishable under Federal law.

PROGRESS REPORTED ON NEW 'STOUT BUSHMASTER'

Of 196 Ford Tri-Motors produced, over 30 are still in use today and its rugged simplicity is the reason for the Hayden Aircraft Corp.'s development of the "Stout Bushmaster," Donald H. Alder, manager of field project engineering for Robinson Aviation, Inc., and a director-incorporator of the Hayden concern, reported in a talk made before the aviation committee of the Los Angeles Chamber of Commerce.

Hayden Aircraft was incorporated in January, 1955, by Richard E. Hayden and a group of associates with the support of the late William B. Stout, original designer of the Ford "Tin Goose." The Ford Motor Co. gave Stout and Hayden Aircraft the exclusive use of the original drawings and engineering data to design and build a modern version of the plane, with the understanding that no connection with the Ford Motor Co. be implied. The number of people associated with this project has now grown to 60, including 20 engineers. Most of these people, working evenings and week ends for shares of Hayden stock, work during the day for paychecks at various Los Angeles aircraft companies.

The modernized "Stout Bushmaster," designed for rough country operation, will be a simple, grass runway, freight-passenger airplane with high lift, short takeoff and landing capabilities, Alder said in his talk in Los Angeles.

New features include: Widening of the fuselage by 18 inches to six feet, thus increasing cargo space by 180 cubic feet to 720 cubic feet; increase in passenger capacity from 14 to 21, installation of 450-hp P&W R985 engines, with cowling for improved temperature control; modernized cockpit with instruments formerly stuck on the outboard engines set on the control panel; installation of hydraulic struts on the fixed landing gear; full swivel tail wheel, and external control cables rerouted internally

A large jeep size cargo door has been added and the floor strengthened for concentrated loads. On later production models, wing flaps will be added.

Alder said the tri-motor, with a gross weight just under 12,500 pounds, will be CAA certified in the personal aircraft category. Its empty weight is expended to be 6500 pounds or a maximum of 7000 pounds and it will carry a net payload of 4200 pounds for a 500-mile distance, or up to 5400 pounds for short hauls.

It will take off with a 600-foot ground roll and clear a 50-foot obstacle within 1000 feet. With flaps it is expected to clear the obstacle within 600 feet. It will land within 600 feet from touchdown. Maximum speed will be 150 mph, with cruise at 125 mph. Stalling speed without flaps will be 55 mph. with flaps 45 mph. Service ceiling will be 20,000 feet.

Hayden Aircraft, Alder said, is estimating the Bushmaster will sell at between $100,000 and $125,000. Prime areas in which the company anticipates sales are Central and South America, Canada and Alaska, the U. S., Europe, South Africa and parts of Asia.—Am Avn Daily.

PUBLIC RECOGNITION

As a result of the extensive use of helicopters in relief and rescue operations in California areas that suffered major damage during the 1956 floods, eight or nine cities that had previously passed ordinances prohibiting or restricting helicopter operations have rescinded these ordinances

REMEMBER

Any FROST is too much frost. Remove all frost before takeoff.

GET YOUR PHYSICAL FROM DESIGNATED MEDICAL EXAMINERS IN THE STATE OF MONTANA

Big Timber—
Standish, Dr. Vernon D., P. O. Box 887

Billings—
Caraway, Dr. Herbert T., Electric Bldg.
Farr, Dr. Earl M., 222 Hart-Albin Bldg.
Morrison, Dr. James D., 1241 N. Broadway.
Smalley, Dr. Raymond E., 407 Medical Arts Bldg.

Bozeman—
Sabo, Dr. Francis J., 212 Commercial Bank Bldg.

Butte—
Casebeer, Dr. Harvey L., 10 S. Idaho St.
Plett, Dr. John V., 10 S. Idaho St.
Thometz, Dr. Robert W., 10 S. Idaho St.

Circle—
Keenan, Dr. Maurice E.

Cut Bank—
Whetstone, Dr. S. D., Davis & Wheeler Bldg., 308 E. Main Street.

Fort Benton—
Anderson, Dr. Evon L., Front St.

Glasgow—
Scharweber, Dr. Henry G., 208 Rundle Bldg.
Smith, Dr. Philip A., 502 Second Ave., S.

Glendive—
Chambers, Dr. Richard O., Northern Pacific Hospital.
Malee, Dr. Thomas J., Northern Pacific Hospital

Great Falls—
Allred, Dr. Ivan A., 503 First Ave., N.
Crago, Dr. Felix H., Great Falls Clinic
Holzberger, Dr. Robert J., 503 First Ave., N.
McGregor, Dr. John F., 301 Ford Bldg.

Hamilton—
Tefft, Dr. C. C., 104 S. Third St.

Havre—
Axiey, Dr. Albert W., Havre Clinic.
Dr. Duncan McKenzie, Jr., 301 4th Ave.
Franken, Dr. N. A., Medical Arts Bldg.

Helena—
Hawkins, Dr. Thomas L., 555 Fuller Ave.
Little, Dr. Amos R. Jr., 555 Fuller Ave.

Jordan—
Farrand, Dr. Brownlow C., Main St.

Kalispell—
Ferree, Dr. Virgil D., 221 First Ave., E.
Wright, Dr. G. Byron, 704 S. Main St.

GOOD

Installation of turboprop engines on a transport that uses conventional piston engines increases its power 63 per cent and decreased empty weight by 5,000 pounds.

FOR SALE

One GA 1EF (ASIB Radio) Bench checked and in good order, Price, $45.00, Write Bob Wellman, Morrison Flying Service, Helena Airport, Helena, Montana.

FOR SALE

1947 Cessna 120, good shape and licensed until July, metal prop, always hangered. Write Guy B. Warren, Turner, Montana.

FOR SALE

Aeronca Champion 7CCM with115 Lycoming, Johnson spray rig, zero time on airframe and engine. Will take run out Champ in trade, $2500 or will sell from the firewall forward. Contact Jess W. Owen, Phone 2-2841 or write Box 1158, Missoula, Montana.

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